What is Organic Chemistry?

The chemistry of carbon compounds (organic chemistry) has a long and rich history and continues to be a vibrant and dynamic field of research. Organic chemistry has evolved both as a core discipline and as an integral component of modern biology, medicine, materials science, and a host of other fields. Despite the expanding definition and influence of the field, the central mission of organic chemistry remains unchanged. Thus, the efforts of students within the organic chemistry area are squarely focused on the synthesis, characterization, and study of organic compounds, the understanding of structure, function, and reactivity, and the invention of entirely new reactions, processes, and properties.

Martin D. Burke
Synthesis and study of small molecules with protein-like functions; molecular prosthetics; synthesis of complex natural products; iterative cross-coupling; MIDA boronates
chemistry.illinois.edu/mdburke

Jefferson Chan
Application of organic chemistry to develop point-of-care diagnostics and targeted therapeutics for cancer; synthesis of new chemical tools for non-invasive molecular imaging
chemistry.illinois.edu/jeffchan

Scott E. Denmark
The invention, development, and application of catalytic asymmetric organic reactions; elucidation of structure-reactivity-selectivity relationships employing spectroscopic, crystallographic, and computational methods
chemistry.illinois.edu/sdenmark

Paul J. Hergenrother
Using compounds derived from synthetic organic chemistry and natural products to explore biological systems; examples include the synthesis and evaluation of anticancer and antibacterial agents with novel modes of action
chemistry.illinois.edu/hergenro

Angad Mehta
Synthesis at the interface of chemistry and biology with a view to develop: (i) vaccine platforms for bacterial and viral vaccines and (ii) photosynthetic bioproduction platforms for semi-synthesis of important therapeutic molecules
chemistry.illinois.edu/apm8

Douglas A. Mitchell
Reactivity-based natural product discovery; complex molecule structural elucidation and derivatization; structure-activity relationships and mode of action determination of biomedically important compounds
chemistry.illinois.edu/douglasm

For more information, visit chemistry.illinois.edu
Other faculty with interests in Organic Chemistry

Gregory S. Girolami
Organometallic chemistry; catalysis

Mary L. Kraft (affiliate faculty)
Biomembrane surface science

Yi Lu
Biocatalysis employing enzymes with unnatural amino acids or non-native cofactors

Liviu Mirica
Transition metal-catalyzed oxidative organic transformations

Ralph G. Nuzzo
Functional organic materials

Eric Oldfield
Antibiotics; anti-cancer drugs

Lisa Olshansky
Synthesis and application of switchable ligands to support dual metal ion coordination geometries

Huimin Zhao (affiliate faculty)
Natural product biosynthesis; synthetic biology

Jeffrey S. Moore
Organic materials including self-healing polymers; materials for energy storage; nanostructures; mechanochemistry
chemistry.illinois.edu/jsmoore

David Sarlah
Synthesis of complex natural products and the related chemical biology; methodology development; asymmetric catalysis
chemistry.illinois.edu/sarlah

Scott K. Silverman
DNA as a catalyst
chemistry.illinois.edu/sks

Wilfred A. van der Donk
Use of synthetic organic chemistry to address biological problems; antibiotic synthesis is of particular interest
chemistry.illinois.edu/vddonk

M. Christina White
Synthesis driven reaction discovery dedicated to the discovery and study of practical, selective catalytic reactions that streamline the synthesis and late stage functionalization of complex molecules; examples include site-selective C—H hydroxylations and aminations and asymmetric C—H oxidations and alkylations
chemistry.illinois.edu/mcwhite7

Steven C. Zimmerman
Organic synthesis of “smart” molecules, catalysts, and polymers to solve problems at the interface of chemistry and biology or chemistry and materials
chemistry.illinois.edu/sczimmer